



# US Army Corps of Engineers

Institute for Water Resources

BUILDING STRONG®

## Hydrologic Modeling System (HEC-HMS) (2009)

**Status:** Completed

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**Purpose:** The purpose of this project is to continually update and improve the Hydrologic Modeling System (HEC-HMS) software, which is designed to simulate watershed hydrology to provide information for decision-making processes. The HEC-HMS software is designed to simulate the precipitation-runoff processes of dendritic watershed systems. It is meant to be applicable in a wide range of geographic areas for solving the widest possible range of problems. This includes large river basin water supply and flood hydrology and small urban or natural watershed runoff.

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**Objective:** The objective of this project is to continually develop and improve the HEC-HMS software. This includes the production of hydrographs by the program for use directly or in conjunction with other software for studies of water availability, urban drainage, flow forecasting, future urbanization impact, reservoir spillway design, flood damage reduction, floodplain regulation and systems operation.

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**Benefits:** The benefit of this project is the development of a generalized modeling system capable of representing many different watersheds. A model of the watershed is constructed by separating the hydrologic cycle into manageable pieces and constructing boundaries around the watershed of interest. Any mass or energy flux in the cycle can then be represented with a mathematical model. In most cases, several model choices are available for representing each flux. Each mathematical model included in the program is suitable in different environments and under different conditions. Making the correct choice requires knowledge of the watershed, the goals of the hydrologic study, and engineering judgment. The wide applicability of the program eliminates the need for a large collection of highly specialized tools, reducing development, maintenance and training costs.

The HEC-HMS program also features a completely integrated work environment including a database, data entry utilities, computation engine and results reporting tools. A graphical user interface allows the seamless movement between the different parts of the program. Program functionality and appearance are the same across all supported platforms. The graphical work environment makes it very approachable for any engineer or scientist with training in hydrology.

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**Progress:** The project is in a continuous cycle of improvements. New features are identified for addition to the software. Any necessary research is conducted in order to prepare design documents for algorithms and supporting framework required to implement the new features. The design is implemented and detailed testing conducted to verify accurate results. A new software version is released and then the cycle repeats.

The most recent general release of the HEC-HMS software is Version 3.2. It is accompanied by a Quick Start Guide, User's Manual, Technical Reference Manual, and Applications Guide.

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**Products:**       • [HEC-HMS 3.2 web site](#)

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**Related Links:**       • [HEC-HMS](#) (*project web site*)

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**Partners:**